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U. S. Nuclear Regulatory Commission
ATTN: Document Control Desk
Washington, DC 20555-0001

BRUNSWICK STEAM ELECTRIC PLANT, UNIT NOS. 1 AND 2
DOCKET NOS. 50-325 AND 50-324/LICENSE NOS. DPR-71 AND DPR-62
RESPONSE TO GENERIC LETTER 99-02, "LABORATORY TESTING OF
NUCLEAR-GRADE ACTIVATED CHARCOAL"

Gentlemen:

On June 3, 1999, the NRC issued Generic Letter (GL) 99-02, "Laboratory Testing of Nuclear-Grade Activated Charcoal." GL 99-02 requested that licensees take various actions and to provide a written response with respect to laboratory testing of charcoal used in engineered safety features ventilation systems. The response to GL 99-02 was requested within 180 days of the date of the generic letter (i.e., November 30, 1999). Enclosure 1 to this letter provides the response to GL 99-02 for Carolina Power & Light (CP&L) Company's Brunswick Steam Electric Plant, Unit Nos. 1 and 2.

No new regulatory commitments are made in this document. Any actions discussed in the submittal represent intended or planned actions by CP&L. Please refer any questions regarding this submittal to Mr. Warren J. Dorman, Supervisor - Licensing, at (910) 457-2068.

Sincerely,

Keith R. Jury
Manager - Regulatory Affairs
Brunswick Steam Electric Plant

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Enclosures:

1. Response To Generic Letter 99-02
2. Technical Specification 5.5.7, "Ventilation Filter Testing Program (VFTP)"

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cc (with enclosures):

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ENCLOSURE 1

BRUNSWICK STEAM ELECTRIC PLANT, UNIT NOS. 1 AND 2 DOCKET NOS. 50-325 AND 50-324/LICENSE NOS. DPR-71 AND DPR-62 RESPONSE TO GENERIC LETTER 99-02, "LABORATORY TESTING OF NUCLEAR-GRADE ACTIVATED CHARCOAL"

Introduction

On June 3, 1999, the NRC issued Generic Letter (GL) 99-02, "Laboratory Testing of Nuclear-Grade Activated Charcoal." GL 99-02 requested that licensees take various actions and to provide a written response with respect to laboratory testing of charcoal used in engineered safety features (ESF) ventilation systems. The Brunswick Steam Electric Plant (BSEP), Units 1 and 2, include two ESF ventilation systems: the Control Room Emergency Ventilation (CREV) system which services the shared control room for Units 1 and 2, and the Standby Gas Treatment (SGT) system for which each unit is provided with redundant, 100% capacity, air filtration trains. The testing requirements for these systems are described in Technical Specification (TS) 5.5.7, "Ventilation Filter Testing Program (VFTP)," for each unit.

Response

NRC Requested Action 1

Submit within 180 days of the date of the GL a written response describing the licensee's current Technical Specification (TS) requirements for laboratory testing of charcoal samples for each Engineered Safety Feature (ESF) ventilation system, including the specific laboratory test protocol, temperature, relative humidity (RH), charcoal bed thickness, total residence time per bed depth, and penetration at which the TS require the test to be performed. If the current TS specifically require laboratory testing of charcoal samples in accordance with the American Society for Testing and Materials (ASTM) D3803-1989 protocol at 30°C, and testing has been in accordance with this standard, then only this requested action is needed to be addressed (i.e., no TS amendment or additional testing is required).

CP&L Response

As stated above, there are two ESF ventilation systems at BSEP; the SGT system and the CREV system. TS 5.5.7 contains the testing requirements for these systems. Copies of TS 5.5.7 for Units 1 and 2 are included in Enclosure 2. The following table summarizes the requested design and testing information.

Requested Information	SGT System	CREV System
Test Protocol	Regulatory Position C.6.a of Regulatory Guide 1.52, Revision 1, 1976	ASTM D3803-1989
Temperature	80°C	30°C
Relative Humidity	≥ 70%	95%
Charcoal Bed Thickness	4 inches	2 inches
Total Residence Time per Bed Depth	0.33 seconds	0.23 seconds
TS Test Penetration	< 1%	< 5%

The TS currently require testing of the CREV system charcoal in accordance with ASTM D3803-1989, "Standard Test Method for Nuclear-Grade Activated Carbon." Therefore, no further action with respect to the CREV system is necessary. Responses to the remaining Requested Actions will be specific to the SGT system.

NRC Requested Action 2

If the licensee chooses to adopt ASTM D3803-1989, submit a TS amendment request to require testing to this protocol within 180 days of the date of this GL. Also, indicate when the next laboratory test is scheduled to be performed.

CP&L Response

In a letter dated November 23, 1999 (i.e., Serial: BSEP 99-0182), CP&L requested an amendment to the TSs for Units 1 and 2 to revise TS 5.5.7.c.1 to require testing of the SGT system in accordance with ASTM D3803-1989. Specifically, TS 5.5.7.c.1 will be revised to state:

Demonstrate for the SGT System that a laboratory test of a sample of the charcoal adsorber, when obtained as described in Regulatory Guide 1.52, Revision 1, Position C.6.b, and tested in accordance with ASTM D3803-1989, at a temperature of 30°C, a face velocity of 61 fpm, and a relative humidity of 70% within the tolerances provided in Table 1 of ASTM D3803-1989, shows the methyl iodide penetration < 0.5%.

The next laboratory test of the SGT system charcoal is scheduled to be performed by January 13, 2000. This and future samples will be tested in accordance with ASTM D3803-1989, as described in the proposed change to TS 5.5.7.c.1.

NRC Requested Action 3

If the licensee proposes an alternate test protocol, address the attributes of the test protocol and submit a TS amendment to require testing to this alternate protocol within 180 days of the date of this GL.

CP&L Response

CP&L is not proposing an alternate test protocol to ASTM D3803-1989.

NRC Requested Action 4

At the next required laboratory surveillance test of a charcoal sample that is 60 or more days after the date of this GL, test the charcoal samples in accordance with ASTM D3803-1989 or replace all 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 of 2 to the charcoal filter efficiency assumed in the licensee's design basis dose analysis. The charcoal samples should continue to be tested in accordance with ASTM D3803-1989, in lieu of the current TS-required laboratory testing [if different from the ASTM D3803-1989 protocol] until the TS amendment is approved by the NRC.

CP&L Response

CP&L has not performed laboratory testing of SGT system charcoal since the issuance of GL 99-02. As stated above, CP&L will perform future testing in accordance with ASTM D3803-1989.

NRC Requested Action 5

Licensees 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 GL.

CP&L Response

CP&L has complied with the requested actions of GL 99-02, therefore, the 60 day response was not required for BSEP.

ENCLOSURE 2

**BRUNSWICK STEAM ELECTRIC PLANT, UNIT NOS. 1 AND 2
DOCKET NOS. 50-325 AND 50-324/LICENSE NOS. DPR-71 AND DPR-62
RESPONSE TO GENERIC LETTER 99-02, "LABORATORY TESTING OF
NUCLEAR-GRADE ACTIVATED CHARCOAL"**

**TECHNICAL SPECIFICATION 5.5.7
VENTILATION FILTER TESTING PROGRAM (VFTP)**

5.5 Programs and Manuals

5.5.6 Inservice Testing Program (continued)

<u>ASME Boiler and Pressure Vessel Code and applicable Addenda terminology for inservice testing activities</u>	<u>Required Frequencies for performing inservice testing activities</u>
Weekly	At least once per 7 days
Monthly	At least once per 31 days
Quarterly or every 3 months	At least once per 92 days
Semiannually or every 6 months	At least once per 184 days
Every 9 months	At least once per 276 days
Yearly or annually	At least once per 366 days
Biennially or every 2 years	At least once per 731 days

- b. The provisions of SR 3.0.2 are applicable to the above required Frequencies for performing inservice testing activities;
- c. The provisions of SR 3.0.3 are applicable to inservice testing activities; and
- d. Nothing in the ASME Boiler and Pressure Vessel Code shall be construed to supersede the requirements of any TS.

5.5.7 Ventilation Filter Testing Program (VFTP)

The VFTP shall establish the required testing of Engineered Safety Feature (ESF) filter ventilation systems.

Tests described in Specification 5.5.7.a and 5.5.7.b shall be performed once per 24 months; after each complete or partial replacement of the HEPA filter bank or charcoal adsorber filter bank; after any structural maintenance on the HEPA filter or charcoal adsorber housing; and, following significant painting, fire, or chemical release in any ventilation zone communicating with the system.

(continued)

5.5 Programs and Manuals

5.5.7 Ventilation Filter Testing Program (VFTP) (continued)

Tests described in Specification 5.5.7.c shall be performed once per 24 months; after 720 hours of charcoal adsorber operation; after any structural maintenance on the HEPA filter or charcoal adsorber housing; and, following significant painting, fire, or chemical release in any ventilation zone communicating with the system.

Tests described in Specification 5.5.7.d and 5.5.7.e shall be performed once per 24 months.

The provisions of SR 3.0.2 and SR 3.0.3 are applicable to the VFTP test frequencies.

- a. Demonstrate for each of the ESF systems that an inplace test of the HEPA filters shows a penetration and system bypass < 1.0% when tested in accordance with Regulatory Guide 1.52, Revision 1, Positions C.5.a and C.5.c, and ANSI N510-1975 at the system flowrate specified below:

<u>ESF Ventilation System</u>	<u>Flowrate (cfm)</u>
Standby Gas Treatment (SGT) System	2700 to 3300
Control Room Emergency Ventilation (CREV) System	1800 to 2200

- b. Demonstrate for each of the ESF systems that an inplace test of the charcoal adsorber shows a penetration and system bypass < 1.0% when tested in accordance with Regulatory Guide 1.52, Revision 1, Positions C.5.a and C.5.d, and ANSI N510-1975 at the system flowrate specified below:

<u>ESF Ventilation System</u>	<u>Flowrate (cfm)</u>
SGT System	2700 to 3300
CREV System	1800 to 2200

- c. 1) Demonstrate for the SGT System that a laboratory test of a sample of the charcoal adsorber, when obtained as described in Regulatory Guide 1.52, Revision 1, Position C.6.b, meets the acceptance criteria of < 1.0% penetration of methyl iodide when tested at a relative humidity \geq 70%.

(continued)

5.5 Programs and Manuals

5.5.7 Ventilation Filter Testing Program (VFTP) (continued)

- c. 2) Demonstrate for the CREV System that a laboratory test of a sample of the charcoal adsorber, when obtained as described in Regulatory Guide 1.52, Revision 1, Position C.6.b, and tested in accordance with ASTM D3803-1989, at a temperature of 30°C and a relative humidity of 95% within the temperature and humidity tolerances provided in Table 1 of ASTM D3803-1989, meets the acceptance criteria of < 5.0% penetration of methyl iodide.
- d. Demonstrate for each of the ESF systems that the pressure drop across the combined HEPA filters, the prefilter (SGT only), and the charcoal adsorbers is less than or equal to the value specified below when tested at the system flowrate specified as follows:

<u>ESF Ventilation System</u>	<u>Delta P (inches wg)</u>	<u>Flowrate (cfm)</u>
SGT System	8.5	2700 to 3300
CREV System	5.25	1800 to 2200
- e. Demonstrate that the heaters for each of the SGT subsystems dissipate ≥ 16.67 kW under a degraded voltage condition when tested in accordance with ANSI N510-1975.

5.5.8 Explosive Gas and Storage Tank Radioactivity Monitoring Program

This program provides controls for potentially explosive gas mixtures contained in the Main Condenser Offgas Treatment System and the quantity of radioactivity contained in unprotected outdoor liquid storage tanks.

The program shall include:

- a. The limits for concentrations of hydrogen in the Main Condenser Offgas Treatment System and a surveillance program to ensure the limits are maintained. Such limits shall be appropriate to the system's design criteria (i.e., whether or not the system is designed to withstand a hydrogen explosion); and

(continued)

5.5 Programs and Manuals

5.5.6 Inservice Testing Program (continued)

ASME Boiler and Pressure
Vessel Code and
applicable Addenda
terminology for
inservice testing
activities

Required Frequencies
for performing inservice
testing activities

Weekly	At least once per 7 days
Monthly	At least once per 31 days
Quarterly or every 3 months	At least once per 92 days
Semiannually or every 6 months	At least once per 184 days
Every 9 months	At least once per 276 days
Yearly or annually	At least once per 366 days
Biennially or every 2 years	At least once per 731 days

- b. The provisions of SR 3.0.2 are applicable to the above required Frequencies for performing inservice testing activities;
- c. The provisions of SR 3.0.3 are applicable to inservice testing activities; and
- d. Nothing in the ASME Boiler and Pressure Vessel Code shall be construed to supersede the requirements of any TS.

5.5.7 Ventilation Filter Testing Program (VFTP)

The VFTP shall establish the required testing of Engineered Safety Feature (ESF) filter ventilation systems.

Tests described in Specification 5.5.7.a and 5.5.7.b shall be performed once per 24 months; after each complete or partial replacement of the HEPA filter bank or charcoal adsorber filter bank; after any structural maintenance on the HEPA filter or charcoal adsorber housing; and, following significant painting, fire, or chemical release in any ventilation zone communicating with the system.

(continued)

5.5 Programs and Manuals

5.5.7 Ventilation Filter Testing Program (VFTP) (continued)

Tests described in Specification 5.5.7.c shall be performed once per 24 months; after 720 hours of charcoal adsorber operation; after any structural maintenance on the HEPA filter or charcoal adsorber housing; and, following significant painting, fire, or chemical release in any ventilation zone communicating with the system.

Tests described in Specification 5.5.7.d and 5.5.7.e shall be performed once per 24 months.

The provisions of SR 3.0.2 and SR 3.0.3 are applicable to the VFTP test frequencies.

- a. Demonstrate for each of the ESF systems that an inplace test of the HEPA filters shows a penetration and system bypass < 1.0% when tested in accordance with Regulatory Guide 1.52, Revision 1, Positions C.5.a and C.5.c, and ANSI N510-1975 at the system flowrate specified below:

<u>ESF Ventilation System</u>	<u>Flowrate (cfm)</u>
Standby Gas Treatment (SGT) System	2700 to 3300
Control Room Emergency Ventilation (CREV) System	1800 to 2200

- b. Demonstrate for each of the ESF systems that an inplace test of the charcoal adsorber shows a penetration and system bypass < 1.0% when tested in accordance with Regulatory Guide 1.52, Revision 1, Positions C.5.a and C.5.d, and ANSI N510-1975 at the system flowrate specified below:

<u>ESF Ventilation System</u>	<u>Flowrate (cfm)</u>
SGT System	2700 to 3300
CREV System	1800 to 2200

- c. 1) Demonstrate for the SGT System that a laboratory test of a sample of the charcoal adsorber, when obtained as described in Regulatory Guide 1.52, Revision 1, Position C.6.b, meets the acceptance criteria of < 1.0% penetration of methyl iodide when tested at a relative humidity $\geq 70\%$.

(continued)

5.5 Programs and Manuals

5.5.7 Ventilation Filter Testing Program (VFTP) (continued)

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- d. Demonstrate for each of the ESF systems that the pressure drop across the combined HEPA filters, the prefilter (SGT only), and the charcoal adsorbers is less than or equal to the value specified below when tested at the system flowrate specified as follows:

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(continued)