



PECO NUCLEAR

A Unit of PECO Energy

GL 99-02

PECO Energy Company
965 Chesterbrook Boulevard
Wayne, PA 19087-5691

November 17, 1999

Docket Nos. 50-277
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U.S. Nuclear Regulatory Commission
Attn: Document Control Desk
Washington, DC 20555

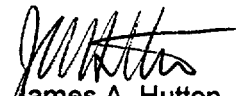
Subject: Peach Bottom Atomic Power Station, Units 2 and 3
Limerick Generating Station, Units 1 and 2
Response to Generic Letter 99-02, "Laboratory Testing
of Nuclear-Grade Activated Charcoal"

Dear Sir or Madam:

PECO Energy Company (PECO Energy) hereby submits our responses to the "Requested Actions" of the subject Generic Letter (GL) 99-02, "Laboratory Testing of Nuclear-Grade Activated Charcoal," dated June 3, 1999. GL 99-02 requests information regarding PECO Energy's current testing requirements for each Engineered Safety Feature (ESF) ventilation system.

If you have any questions concerning this matter, please do not hesitate to contact us.

Very truly yours,


James A. Hutton
Director - Licensing

Attachment

cc: H. J. Miller, Administrator, Region I, USNRC
A. C. McMurray, USNRC Senior Resident Inspector, PBAPS
A. L. Burritt, USNRC Senior Resident Inspector, LGS

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PDR ADOCC 0500277

PECO Energy Company
Peach Bottom Atomic Power Station, Units 2 and 3
Limerick Generating Station, Units 1 and 2
Response to Generic Letter 99-02

The following information constitutes the PECO Energy Company response to the specific "Requested Actions" in Generic Letter (GL) 99-02 for Peach Bottom Atomic Power Station (PBAPS), Units 2 & 3 and Limerick generating Station (LGS), Units 1 & 2.

- References:
1. Letter from USNRC to G. A. Hunger (PECO Energy Company), dated February 11, 1997
 2. USNRC Generic Letter 99-02, "Laboratory Testing of Nuclear-Grade Activated Charcoal," dated June 3, 1999
 3. Letter from J. A. Hutton (PECO Energy Company) to USNRC (U. S. Nuclear regulatory Commission), dated November 17, 1999
 4. Letter from J. A. Hutton (PECO Energy Company) to USNRC (U. S. Nuclear regulatory Commission), dated November 5, 1999

Requested Action 1 (Reference 2 contains all requested actions)

- "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

- A. At PBAPS, there are two Engineered Safety Feature (ESF) ventilation systems affected by this Generic Letter: Standby Gas Treatment (SGT) System and Main Control Room Emergency Ventilation (MCREV) System. The following are the testing parameters prior to the implementation of GL 99-02.

Specific Test Protocol

The existing Peach Bottom Technical Specifications for SGTS and MCREVS charcoal filter testing, contained within Section 5.5.7.c, Ventilation Filter Testing Program, require that the representative charcoal samples be obtained per Regulatory Guide 1.52, "Design, Testing, and Maintenance Criteria For ESF Air Filtration and Adsorption Units," Rev. 2, dated March 1978. Further testing of the representative sample is currently performed referencing Regulatory Guide 1.52, and utilizes specific testing conditions and acceptance criteria contained within the

Technical Specification 5.5.7.c, (e.g., higher test bed temperature). Regulatory Guide 1.52 refers to ANSI N509-1976, which utilizes RDT Standard M 16-1T, for developing actual testing methodologies. Meeting this laboratory testing methodology with the conditions and acceptance criteria assigned by the Technical Specifications is necessary in order to maintain the assigned decontamination filter efficiency credited in the licensed accident analyses.

Temperature

The SGTS is tested at a temperature of $\geq 190^{\circ}\text{F}$ and MCREV is tested at a temperature of $\geq 125^{\circ}\text{F}$. The tests do not differentiate between pre-equilibration, challenge, and elution.

Relative Humidity

The incoming air stream to the SGT filter system is maintained at a relative humidity not to exceed 70%. The incoming air stream to the MCREV is not provided with relative humidity control and therefore is tested at 95% relative humidity.

Charcoal Bed Thickness

The SGT and MCREV systems each have a charcoal bed thickness of 2 inches.

Total Residence Time per Bed Depth

SGT and MCREV systems each have a total residence time per bed depth of 0.25 sec.

Methyl Iodide Penetration

The methyl iodide penetration is $\leq 5\%$ for SGTS, and is $\leq 10\%$ for MCREV.

- B. At LGS, there are three Engineered Safety Feature (ESF) ventilation systems: Standby Gas Treatment System (SGTS), Reactor Enclosure Recirculation System (RERS), and Control Room Emergency Fresh Air System (CREFAS). The following are the testing parameters prior to the implementation of GL 99-02.

Specific Test Protocol

The existing LGS Technical Specifications for SGTS, RERS, and CREFAS require that the laboratory analysis of representative carbon samples meet the laboratory testing criteria specified in Regulatory Guide 1.52, "Design, Testing, and

Maintenance Criteria for ESF Air Filtration and Adsorption Units," Rev. 2, dated March 1978, for methyl iodide penetration. Meeting this laboratory testing criteria is necessary in order to maintain the assigned decontamination filter efficiency credited in the licensed accident analyses. Regulatory Position C.6.b of Reg. Guide 1.52 requires that the charcoal sample pass the laboratory testing specified in Table 2. Table 2 of Reg. Guide 1.52 specifies: 1) that the charcoal samples must be tested for methyl iodide penetration at a relative humidity of 70% per the requirements of Table 5-1 of ANSI N509-1976, and 2) the allowable methyl iodide penetration acceptance criteria to be used. Table 5-1 of ANSI N509 specifies that the radioiodine removal efficiency testing be conducted in accordance with the requirements of RDT Standard M16-1T, dated October, 1973. This RDT standard performs the methyl iodide penetration efficiency testing at a challenge gas temperature of 80°C (176°F).

Temperature

The temperatures used for testing charcoal filters (applicable to all three systems) is specified in Reg. Guide 1.52 (ANSI N509) as follows:

- Pre-equilibration - 25 °C
- Challenge - 80 °C
- Elution - 25 °C

Relative Humidity

The incoming air stream to all three filter systems is maintained at a relative humidity not to exceed 70%.

Charcoal Bed Thickness

The SGTS has a charcoal bed thickness of 8 inches while RERS and CREFAS each have a bed thickness of 2 inches.

Total Residence Time per Bed Depth

RERS and CREFAS have a total residence time per bed depth of 0.25 sec. SGTS has total residence time per depth of 0.68 seconds which is a deviation from RG 1.52. This was analyzed and approved previously by the NRC in Reference 1 letter above.

Methyl Iodide Penetration

The methyl iodide penetration is $\leq 0.175\%$ for SGTS, and is $\leq 1.0\%$ for both RERS and CREFAS.

Requested Action 2

- “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 10 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. (Enclosure 2 is a sample TS that the NRC considers acceptable.)”

Response

PBAPS submitted a TS amendment request in the Reference 3 letter and LGS submitted a TS amendment request in the Reference 4 letter.

Requested Action 3

- “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 10 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

PECO Energy Company is not proposing an alternate test protocol. American Society for Testing and Materials (ASTM) D3803-1989, “Standard Test Method for Nuclear-Grade Activated Carbon,” as requested by the subject Generic Letter, is being adopted.

Requested Action 4

- “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 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

As of August 2, 1999, PECO Energy Company has begun laboratory testing activated charcoal samples to the ASTM D3803-1989 standard per the scheduled Surveillance Tests for ESF ventilation systems.

Requested Action 5

- “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

PECO Energy Company has chosen to comply with all of the above actions outlined in GL 99-02.