



# Duquesne Light Company

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L-99-157

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U. S. Nuclear Regulatory Commission

✓ Attention: Document Control Desk

Washington, DC 20555-0001

**Subject: Beaver Valley Power Station, Unit No. 1 and No. 2  
BV-1 Docket No. 50-334, License No. DPR-66  
BV-2 Docket No. 50-412, License No. NPF-73  
Response to Generic Letter 99-02:  
"Laboratory Testing of Nuclear Grade Activated Charcoal"**

The purpose of this letter is to provide a response to the action items identified in Nuclear Regulatory Commission's (NRC's) Generic Letter 99-02, "Laboratory Testing of Nuclear Grade Activated Charcoal."

Generic Letter 99-02 identifies that the testing of nuclear-grade activated charcoal to any standard other than ASTM D3803-1989, "Standard Test Method for Nuclear-Grade Activated Carbon," does not provide assurance for complying with 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 (10 CFR) and Subpart A of 10 CFR Part 100. Generic Letter 99-02 is intended to apply to all safety-related air-cleaning units used in the engineered safety feature (ESF) ventilation systems of nuclear power plants that reduce the potential onsite and offsite consequences of a radiological accident by adsorbing radioiodine.

The NRC identified the four groups of Nuclear Plants listed below in Generic Letter 99-02.

1. Plants in compliance with their Tech Specs that test in accordance with ASTM D3803-1989.
2. Plants in compliance with their Tech Specs that test in accordance with a test protocol other than ASTM D3803-1989.

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3. **Plants not in compliance with their Tech Specs that test in accordance with ASTM D3803-1989.**
4. **Plants not in compliance with their Tech Specs that test in accordance with a test protocol other than ASTM D3803-1989.**

**Beaver Valley Power Station (BVPS) Unit 1 and Unit 2 fall into the NRC's second group. BVPS is in compliance with our Tech Specs and test in accordance with a test protocol other than ASTM D3803-1989. Unit 1 Supplementary Leak Collection and Release System (SLCRS) complies to laboratory testing in accordance with USAEC RDT Standard M-16-1T, June 1972. Unit 2 SLCRS, Unit 1 Control Room Emergency Ventilation System (CREVS), and Unit 2 CREVS complies to laboratory testing in accordance with ANSI N510-1980 which references the procedures of ASTM D3803-1979.**

**In support of this Generic Letter request, BVPS has submitted License Amendment Request Nos. 1A-263 and 2A-138 to the NRC to update the BVPS-1 & -2 Tech Specs. (L-99-145 dated September 20, 1999 - BVPS-1 TAC #MA6758 and BVPS-2 TAC #MA6759)**

**Attached is the BVPS response to the five action items identified in the Generic Letter.**

**If there are any questions concerning this matter, please contact Mr. Mark S. Ackerman, Manager, Safety & Licensing Department at 412-393-5203.**

**Sincerely,**

  
**James E. Cross**

**Attachment**

- c: Mr. D. S. Collins, Project Manager  
Mr. D. M. Kern, Sr. Resident Inspector  
Mr. H. J. Miller, NRC Region I Administrator**

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References:

1. ND3SPE:1795 dated 9/16/99
2. ND3NSM:8851 dated 9/15/99 (L-99-145 dated 9/20/99)
3. NPD3DRE:0575 dated 11/10/99

Commitments: None

Duquesne Light Company  
 Beaver Valley Power Station Units 1 and 2  
 Response to Generic Letter 99-02:  
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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 current BVPS Tech Specs 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, penetration, and face velocity at which the Tech Specs require the test to be performed are listed below:

Unit System	Test Protocol	Tech Spec	Test Temp	Relative Humidity	Bed Thickness	Residence Time	Penetration	Face Velocity
Unit 1 16 SLCRS	USAEC RDT Standard M-16-1T, June 1972	3/4.7.8.1	≥ 125°F	≥ 95%	2" Trays	0.18 sec – 0.22 sec	≤ 10.0%	54.0 <sup>ft</sup> / <sub>min</sub> ± 20%
Unit 1 44A Control Room	ASTM D3803- 1979	3/4.7.7.1	30°C ± 1/2 °C	≥ 70%	2" Trays	0.25 sec	≤ 1.0%	40.8 <sup>ft</sup> / <sub>min</sub> ± 20%
Unit 2 16 SLCRS	ASTM D3803- 1979	3/4.7.8.1	30°C ± 1/2 °C	≥ 70%	2" Deep Bed	0.25 sec	≤ 1.0%	42.0 <sup>ft</sup> / <sub>min</sub> ± 20%
Unit 2 44A Control Room	ASTM D3803- 1979	3/4.7.7	30°C ± 1/2 °C	≥ 70%	2" Trays	0.25 sec	≤ 1.0%	42.0 <sup>ft</sup> / <sub>min</sub> ± 20%

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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 <sup>(1)</sup> 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.)

<sup>(1)</sup> The value of 10% was revised to 110% per an update of Generic Letter 99-02 (ERRATA).

Response:

BVPS will adopt ASTM D3803-1989 test protocol instead of proposing an alternate test protocol as described in the Generic Letter. BVPS has prepared and submitted License Amendment Requests (LAR) for Unit 1 Tech Specs 3/4.7.7.1 and 3/4.7.8.1 and Unit 2 Tech Specs 3/4.7.7 and 3/4.7.8.1 per BVPS letter L-99-145 dated September 20, 1999 (BVPS-1 TAC# MA6758 and BVPS-2 TAC# MA6759), which identified ASTM D3803-1989 as the test protocol for laboratory testing. BVPS ventilation systems that Generic Letter 99-02 will apply to are listed below along with the proposed test temperature, RH, penetration, and face velocity of the system. Note that all test values are based on system design airflow, assumption made in dose calculations, whether or not the system has a heater, and the requirements of ASTM D3803-1989.

Unit	System	Tech Spec	Test Temperature	Relative Humidity	Penetration	Face Velocity
1	16 SLCRS	3/4.7.8.1	30°C ± 1/2°C	≥ 95%	≤ 10.0%	54.0 <sup>ft</sup> / <sub>min</sub> ± 20%
1	44A Control Room	3/4.7.7.1	30°C ± 1/2°C	≥ 70%	≤ 1.0%	40.8 <sup>ft</sup> / <sub>min</sub> ± 20%
2	16 SLCRS	3/4.7.8.1	30°C ± 1/2°C	≥ 70%	≤ 1.0%	42.0 <sup>ft</sup> / <sub>min</sub> ± 20%
2	44A Control Room	3/4.7.7	30°C ± 1/2°C	≥ 70%	≤ 1.0%	42.0 <sup>ft</sup> / <sub>min</sub> ± 20%

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**In response to NRC’s request for the schedule of the next laboratory test of the applicable filters, it should be noted that all applicable filters have been satisfactorily tested to both the requirements of BVPS Tech Specs and the requirements of ASTM D3803-1989. At this time, all filters at both Unit 1, Unit 2, and stock material in the warehouse have been tested in accordance with ASTM D3803-1989 and are in compliance with the new standard. Refer to BVPS’ response to action item 4 for details.**

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 <sup>(1)</sup> 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.

<sup>(1)</sup> The value of 10% was revised to 110% per an update of Generic Letter 99-02 (ERRATA).

**Response:**

**BVPS-1 and -2 have submitted Tech Spec amendment requests to allow BVPS-1 and -2 to test the required charcoal samples in accordance with the ASTM D3803-1989 protocol at 30 °C [86 °F] as requested by this generic letter. Therefore, this action request (to address an alternate test protocol concern) is not applicable to BVPS-1 or BVPS-2.**

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:**

**BVPS has previously developed an action plan to prepare for the issuance of Generic Letter 99-02. The BVPS action plan was implemented on March 3, 1998, as a result of our review of Federal Register Volume 63, Number 37, dated February 25, 1998. As part of the action plan, all applicable charcoal filters were tested to both the requirements of BVPS Tech Specs and the requirements of ASTM D3803-1989. At this time, all charcoal filters at both Unit 1, Unit 2, and stock material in the warehouse have been tested in accordance with ASTM D3803-1989 and are in compliance with the standard. Listed below are all of the filter test results since March 3, 1998, using both the Tech Spec requirements and ASTM D3803-1989.**

**Relative to the identified factor of safety criteria which compares Tech Spec requirements with design-basis dose analysis, the Unit 1 and Unit 2 Control Room charcoal filters and Unit 2 SLCRS charcoal filters meet both the Tech Spec requirements and the GL recommended safety factor of 2.**

**The Unit 1 SLCRS charcoal filters meet the Tech Spec requirements, however, these filters approach, but, do not meet the GL recommended safety factor of 2 recently identified in this GL for the Unit 1 FHA design-basis dose analysis. This is considered acceptable since:**

- **These Tech Spec requirements are being met with some additional factor of safety, but not to the level recently suggested by the GL. The organic iodine removal requirement needed to support the Unit 1 FHA design-basis dose analysis is approximately 84% versus the 90% Tech Spec requirement. This provides a 6% margin on the charcoal's tested results.**
- **RG 1.52 is not part of the license basis for the Unit 1 SLCRS.**

- Using the GL safety factor calculation for the Unit 1 FHA, the safety factor results in a value of 1.6 which approaches the suggested GL value of 2.
- Also, if a lower organic iodine removal efficiency (using the safety factor of 2) is recalculated into the Unit 1 FHA (as well as the LOCA) calculations, the resulting analyzed doses will remain within the 10CFR Part 100 limits. The present Unit 1 FHA dose results are 14.6 rem Thyroid dose as compared to the regulatory limits of 300 rem.

Status	System	Filter(S)	Date	Results Using Current Technical Specifications	Results Using ASTM D3803-1989	Carbon Change Date	Results Using Current Technical Specifications	Results Using ASTM D3803-1989
COMPLETED	UNIT 2 TRAIN A SLCRS	2HVS-FLTA205A	04/14/98	99.98%	99.69%	05/21/98	99.99%	99.94%
		2HVS-FLTA208A	04/14/98	99.58%	95.17%	05/21/98	99.99%	99.94%
				(AC ≥ 99.0%)	(AC ≥ 99.0%)		(AC ≥ 99.0%)	(AC ≥ 99.0%)
COMPLETED	UNIT 2 TRAIN B SLCRS	2HVS-FLTA205B	07/29/98	99.88%	99.04%	10/19/98	99.99%	99.83%
		2HVS-FLTA208B	07/29/98	99.96%	99.66%	10/19/98	99.99%	99.85%
				(AC ≥ 99.0%)	(AC ≥ 99.0%)		(AC ≥ 99.0%)	(AC ≥ 99.0%)
COMPLETED	UNIT 1 CONTROL ROOM	VS-FL-2	09/02/98	99.89%	99.40%	N/A	N/A	N/A
				(AC ≥ 99.0%)	(AC ≥ 99.0%)			
COMPLETED	UNIT 2 TRAIN A CONTROL ROOM	2HVC-FLTA252A	09/29/98	99.94%	98.44%	09/07/99	99.99%	99.65%
			11/03/98	99.91%	96.26%			
				(AC ≥ 99.0%)	(AC ≥ 99.0%)		(AC ≥ 99.0%)	(AC ≥ 99.0%)
COMPLETED	UNIT 1 TRAIN A SLCRS	VS-FL-5	10/05/98	99.89%	98.60%	10/10/98	98.44%	96.17%
			10/10/98	98.44%	96.17%	Changed due to F/P flood.	(AC ≥ 90.0%)	(AC ≥ 90.0%)
				(AC ≥ 90.0%)	(AC ≥ 90.0%)			
COMPLETED	UNIT 1 TRAIN B SLCRS	VS-FL-8	11/16/98	98.46%	91.28%	N/A	N/A	N/A
				(AC ≥ 90.0%)	(AC ≥ 90.0%)			
COMPLETED	UNIT 2 TRAIN B CONTROL ROOM	2HVC-FLTA252B	01/06/99	99.95	98.37	09/15/99	99.99%	99.65%
				(AC ≥ 99.0%)	(AC ≥ 99.0%)		(AC ≥ 99.0%)	(AC ≥ 99.0%)



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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:**

**BVPS-1 and -2 have submitted Tech Spec amendment requests to allow BVPS-1 and -2 to test the required charcoal samples in accordance with the ASTM D3803-1989 protocol at 30 °C [86 °F] as requested by this generic letter. Therefore, this action request (for addressees who choose not to do the above actions as requested by the generic letter) is not applicable to BVPS-1 or BVPS-2.**